

## REMARKS

### I. Introduction

With the cancellation without prejudice of claims 15 and 17, claims 11, 13, 14 and 18 to 23 are pending in the present application. In view of the foregoing amendments and the following remarks, it is respectfully submitted that all of the presently pending claims are allowable, and reconsideration is respectfully requested.

### II. Rejection of Claims 11, 13, 15, 17 and 20 to 23 Under 35 U.S.C. § 103(a)

Claims 11, 13, 15, 17 and 20 to 23 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of U.S. Patent No. 5,841,611 ("Sakakima et al.") and U.S. Patent No. 6,144,524 ("Haratani et al."). It is respectfully submitted that the combination of Sakakima et al. and Haratani et al. does not render these claims unpatentable for at least the following reasons.

Although Applicants may not agree with the merits of the rejection, to facilitate matters, claim 11 has been amended to incorporate the features of claim 15 and some of the features of claim 17, and claims 15 and 17 have been canceled without prejudice. Claim 11 as amended recites, in relevant part, that the magneto-resistive layer stack has a third magnetic layer and a fourth magnetic layer which are separated from one another by a second non-magnetic intermediate layer, and the non-magnetic intermediate layer of the layer arrangement and the second non-magnetic intermediate layer of the magneto-resistive layer stack at least one of (a) are at least substantially made of the same material and (b) have a substantially equal thickness, and that the magneto-resistive layer stack is situated directly on the layer arrangement. Support for these amendments may be found, for example, on page 4, lines 5 to 9 and page 4, line 34 to page 5, line 2 of the Specification, as well as in Figure 1.

Neither Sakakima et al., nor Haratani et al. discloses, or even suggests, that a magneto-resistive layer stack having two magnetic layers separated from one another by a non-magnetic intermediate layer is situated directly on a layer arrangement having a magnetically hard layer, a magnetically soft layer, and a non-magnetic intermediate layer separating the magnetically hard layer and the magnetically soft layer from one another.

Sakakima et al. describes a magnetoresistance effect device including a substrate

(7,107) and a multilayer structure having a hard magnetic film (1, 101), a soft magnetic film (3,103) and a non-magnetic film (2, 102) for separating the hard magnetic film and the soft magnetic film. However, the two soft magnetic films (103) separated by non-magnetic film (102) at the top of Figure 24 of Sakakima et al., which group of films the Office Action considers to constitute a magneto-resistive layer stack, is separated by three layers from the first group of layers including a non-magnetic film (102) sandwiched by a hard magnetic film (101) and a soft magnetic film (103), i.e., a layer arrangement as recited in claim 11. Therefore, Figure 24 of Sakakima et al. does not show a magneto-resistive layer stack situated directly on a layer arrangement as recited in claim 11. Furthermore, none of the other multilayer structures shown in the figures of Sakakima et al. show a magneto-resistive layer stack as described in claim 11, situated directly on a layer arrangement as described in claim 11. Moreover, Haratani et al. describes a spin valve magneto-resistance device (10) including a nonmagnetic layer (16) sandwiched by free and pinned magnetic layers (12, 18), but does not cure the deficiencies of Sakakima et al. with respect to the above-mentioned features. Accordingly, it is respectfully submitted that the combination of Sakakima et al. and Haratani et al. does not render claim 11 unpatentable for at least these reasons.

Regarding claim 13, neither Sakakima et al., nor Haratani et al. discloses, or even suggests that a magneto-resistive layer stack having two magnetic layers separated from one another by a non-magnetic intermediate layer is situated directly on a layer arrangement having two magnetically hard layers and a non-magnetic intermediate layer separating the magnetically hard layers from one another. The two soft magnetic films (103) separated by non-magnetic film (102) at the top of Figure 24 of Sakakima et al., which group of films the Office Action considers to constitute a magneto-resistive layer stack, is separated by a nonmagnetic film (102) from the first group of layers including a non-magnetic film (102) sandwiched by two hard magnetic films (101), i.e., a layer arrangement as recited in claim 13. Therefore, Figure 24 of Sakakima et al. does not show a magneto-resistive layer stack situated directly on a layer arrangement as recited in claim 13. Furthermore, none of the other multilayer structures shown in the figures of Sakakima et al. show a magneto-resistive layer stack as described in claim 13, situated directly on a layer arrangement as described in claim 13. Moreover, Haratani et al. does not cure the deficiencies of Sakakima et al. with respect to the

above-mentioned features. Accordingly, it is respectfully submitted that the combination of Sakakima et al. and Haratani et al. does not render claim 13 unpatentable for at least these reasons.

As mentioned above, claims 15 and 17 have been canceled without prejudice, thereby rendering moot the rejection with respect to these claims.

Claim 22 includes features analogous to claim 11 and has been amended in a manner analogous to claim 11. Accordingly, it is respectfully submitted that the combination of Sakakima et al. and Haratani et al. does not render claim 22 unpatentable for at least the reasons set forth above.

As for claims 20 and 21 and claim 23, which respectively depend from claims 11 and 22 and therefore include all of the features of claims 11 and 22, it is respectfully submitted that the combination of Sakakima et al. and Haratani et al. does not render these dependent claims unpatentable for at least the reasons set forth above in support of the patentability of claims 11 and 22.

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

### **III. Rejection of Claims 14, 18 and 19 Under 35 U.S.C. § 103(a)**

Claims 14, 18 and 19 were rejected under 35 U.S.C. § 103(a) as unpatentable over the combination of Sakakima et al., Haratani et al. and U.S. Patent No. 6,611,034 ("Den"). It is respectfully submitted that the combination of Sakakima et al., Haratani et al. and Den does not render these claims unpatentable for at least the following reasons.

Claims 14, 18 and 19 ultimately depend from claim 11 and therefore include all of the features of claim 11. In addition, as set forth in detail in Section II of this response, neither Sakakima et al., nor Haratani et al. discloses, or even suggests, at least the feature of claim 11 that a magneto-resistive layer stack having two magnetic layers separated from one another by a non-magnetic intermediate layer is situated directly on a layer arrangement having a magnetically hard layer, a magnetically soft layer, and a non-magnetic intermediate layer separating the magnetically hard layer and the magnetically soft layer from one another. Furthermore, Den describes a magnetic device and a solid-state magnetic memory and shows cross-sectional views of a laminated magnetic material in the magnetic device. However, Den is not asserted to disclose or suggest, nor does Den disclose

or suggest, at least the above-mentioned feature of claim 11. Accordingly, it is respectfully submitted that the combination of Sakakima et al., Haratani et al. and Den does not render unpatentable claims 14, 18 and 19, which depend from claim 11.

In view of all of the foregoing, withdrawal of this rejection is respectfully requested.

**IV. Conclusion**

In light of the foregoing, Applicants respectfully submit that all pending claims are in condition for allowance. Prompt reconsideration and allowance of the present application are therefore earnestly solicited.

Respectfully submitted,

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